MDE July 21 & 22 2016

Item/Analysis	Included	Not Included	Comments
Conceptual model	X		Extensive conceptual model that includes a general overview of typical ozone formation in Maryland, a literature review of studies that examine the role of wildfires on downwind ozone, and the meteorology, O_3 and NO_x concentrations and satellite smoke observations for the days leading up to, during, and after the exceptional event dates. (Pages 15-49)
Supporting documentation statement pertaining to Exceptional Events Rule and cause of wildfire	X		One paragraph defining the event as "natural", and one paragraph defining the event as "not reasonably controllable or preventable" (Page 88)
Concluding statement – including public notice statement	X		Public notice posted on May 26th (Page 88)
At least **one** of the following:	-	-	-
Trajectory analysis (e.g. HYSPLIT)	X		72-hour HYSPLIT back trajectories from central Maryland beginning on July 20 (Figure 28)
Satellite Imagery of plume with evidence of plume impacting ground	X		Carbon monoxide satellite data from July 18-21 showing plume of CO moving SE from NW Canada and reaching Maryland by July 20 (Figure 31)
All of the following:	-	-	-
Q/d (≥100 tpd/km)	X		Q/d = 1.8 tpd/km --- much less than the recommended 100 tpd/km (Table 4)
Comparison of event O_3 concentration with non-event (e.g. 99th percentile, or concentration is one of the 4 highest within the year)	X		3 sites met or exceeded the 99th percentile on July 21 for 2012-2016 2 sites on July 22 (Table 6)

At least **one** of the following:			
Evidence of changes in spatial/temporal O$_3$ and/or NO$_x$ patterns	X		Spatial changes in ozone observed between July 18-23, with elevated ozone concentrations in MD on July 21 and 22 (Figure 15). A figure of NO$_x$ is included, but does not show visibly higher concentrations and no statistical tests were performed for significance (Figure 35)
Photographs of ground-level smoke at monitors		X	
Concentrations of supporting ground-level measurements (CO, PM (mass or speciation), VOCs, or altered pollutant ratios)	X		CO peaked during affected period (Figure 34). PM$_{2.5}$ concentrations appear somewhat higher (Figure 32). TNMOC does not appear to be substantially higher than other days in July (Figure 37). O$_3$:NO$_x$ were 24th and 13th highest ratios in July since 2010 (Figure 38).
At least **one** of the following:	-	-	-
Similar day analysis	X		Analysis completed, but no similar days found, so only a "loose pattern similarity" analysis was performed (Pages 84-87)
Statistical regression model(s)		X	
Photochemical model(s)	X		Small areas of CMAQ underpredicted ozone in western MD on July 20 and 21 (Figure 40)

*All tiers

*Tiers 2 & 3

*Tier 3